

Reconstruction Strategy

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Reconstruction Strategy

- ❑ What are LArSoft reconstruction strategies going forward? I'd like to just begin the discussion.
- ❑ Collaborations are growing. Expectations for the usefulness of the work are growing.
- ❑ There are bodies now to throw at these things. What should those people be doing?
- ❑ Would be nice to show within, say, 6–9 months,
 - Full Reconstruction of CCQE events,
 - Make some stab at automating the underlying event type classification, ala the handscans (minus the hand and the scan): codify the handscanner's intuition.
 - Some effort at DIS event characterization, ...

Current Status

- I think the following are true:
 - Shower code works to separate gammas/es, as advertised. Is still under development
 - Tracking code -- Bezier and KalmanHits -- are promising and have made great headway
 - Calorimetry dEdx and likelihood pID exist
 - **Most of the above work has been done on single particle MC.**
- Lots of other great work, of course, not necessarily germane to this discussion:
 - Vertexing in 2D
 - Electronics simulation/deconvolution, ...

Beyond single particle MC

- ❑ Tracking: We have seen some CCQE mu+proton events thrown at tracking algos. Track3DKalmanHits are sensitive to input Seeds. Not yet tackled in yet more complicated neutrino events.
- ❑ I believe we have not seen m_{π^0} tackled yet by putting together two showers' invariant mass. Let alone in a CCQE/Resonant event or DIS neutrino event.
- ❑ We've seen some cosmic muon overlays with GENIE evts. Just EVDs, have not seen any effort at subtracting the cosmics.

Other Ideas for high-level things we can do to make progress toward the big LArSoft questions

- ❑ Summing the energy in the hits on a plane for complicated DIS events: how well does that do?
- ❑ Are some resonant events such that the Delta invariant mass can be assembled?
- ❑ Deciding what gets tracked, what gets shower-recon'd and building modules that do both inside one event, as in a CCpi0 event.
- ❑